

STATE OF THE WORKFORCE REPORT XV:

NORTH ALABAMAWORKS



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CONTENTS

Acknowledgments.....	i
Summary	iii
Labor Utilization and Supply Flows	v
Workforce Supply	1
Labor Force Activity	1
Commuting Patterns	3
Population	5
Educational Attainment	6
Underemployment and Available Labor.....	6
Per Capita Income	7
Workforce Demand.....	12
Industry Mix.....	12
Job Creation and Net Job Flows.....	13
High-Demand, Fast-Growing, High-Earning, and Sharp-Declining Occupations.....	13
Skills and Skills Gap Analyses.....	18
Education and Training Issues	22
Implications and Recommendations.....	23

SUMMARY

This report analyzes workforce supply and demand issues using available metrics of workforce characteristics for the North AlabamaWorks workforce region and presents implications and recommendations.

North AlabamaWorks had a 2.7 percent unemployment rate in March 2021, with 14,618 unemployed workers. An underemployment rate of 20.3 percent for 2021/2020 means that the region has an available labor pool of 122,694 that includes 108,076 underemployed workers who are looking for better jobs and are willing to commute farther and longer for such jobs.

Net out-commuting from North AlabamaWorks rose from 7,875 in 2005 to 8,345 in 2018, while commuting within the region went up. Commute times and distances were down in 2020 from 2019 suggesting that congestion eased perhaps due to the effects of the COVID-19 pandemic and recession. Nevertheless, as the regional economy recovers and population growth continues, congestion is likely to pose real challenges in the Huntsville and Decatur metro areas. Continuous maintenance and development of transportation infrastructure and systems is important and necessary to avoid congestion, which can slow economic development and recovery.

By sector, the top five employers in the region are manufacturing; health care and social assistance; retail trade; professional, scientific, and technical services; and accommodation and food services. In the first quarter of 2020, they provided 293,329 jobs, 63.7 percent of the regional total. Two of the leading employers—manufacturing and professional, scientific, and technical services—paid above the region's average monthly wage of \$4,482. Economic

development programs should aim to diversify and strengthen the region's economy by retaining, expanding, and attracting industries that pay high-wages. Likewise, workforce development should focus on preparing workers for these industries.

On average 17,818 jobs were created per quarter from second quarter 2001 to first quarter 2020; quarterly net job flows averaged 551. Job creation is the number of new jobs that are added in the region either by new businesses or through the expansion of existing firms. Net job flows reflect the difference between current and previous employment at all businesses.

The top five high-demand occupations are Combined Food Preparation and Serving Workers, Including Fast Food; Retail Salespersons; Assemblers and Fabricators, All Other, Including Team Assemblers; Laborers and Freight, Stock, and Material Movers, Hand; and Farmworkers and Laborers, Crop, Nursery, and Greenhouse.

The top five fast-growing occupations are Occupational Therapy Assistants; Painters, Transportation Equipment; Information Security Analysts; Statisticians; and Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

The top 50 high-earning occupations are mainly in health, management, and engineering fields and have a minimum salary of \$98,098. Eight of the top 10 occupations are in healthcare and the remaining two are in management and computer science.

Of the top 40 high-demand, 20 fast-growing, and 50 high-earning occupations in the region, one—Software Developers, Applications—

belongs in all three categories. Eight occupations are both high-demand and high-earning, and four occupations are both high-demand and fast-growing and four occupations are both high-earning and fast-growing.

Of the region's 734 occupations, 124 are expected to decline over the 2018 to 2028 period. The 20 sharpest declining occupations are expected to drop by a minimum of 20 jobs and at least two percent. Education and training for these 20 occupations should slow accordingly.

Skill and education requirements for jobs keep rising. Educational and training requirements of fast-growing and high-earning occupations demonstrate the importance of education in developing the future workforce. In the future, more jobs will require a minimum of postsecondary education and training.

The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs indicates a strong need for training in these skills. For North AlabamaWorks, the pace of training needs to increase for technical, systems, and a few resource management skills. The scale of training for social and basic skills needs to increase too. Ideally, all high school graduates should possess basic skills so that postsecondary and higher education can focus on other and more complex skills. Employers should be an integral part of planning for training, as they can help identify future skill needs and any existing gaps.

From a 2018 base, worker shortfalls of about 48,900 and 61,300 are expected for 2028 and 2030, respectively. By 2040, the worker shortfall will reach 88,200 workers. This demands a focus on worker skills and shortages through 2040. Worker shortfalls for critical occupations will also need to be addressed continuously. Strategies to address skill needs and worker shortfalls might include: (1) improving education and its funding; (2) introducing economic

opportunities that attract new and younger residents; (3) lowering the high school dropout rate; (4) focusing on hard-to-serve populations (e.g. out-of-school youth); (5) continuing and enhancing programs to assess, retrain, and place dislocated workers; (6) encouraging older worker participation in the labor force; and (7) facilitating in-commuting.

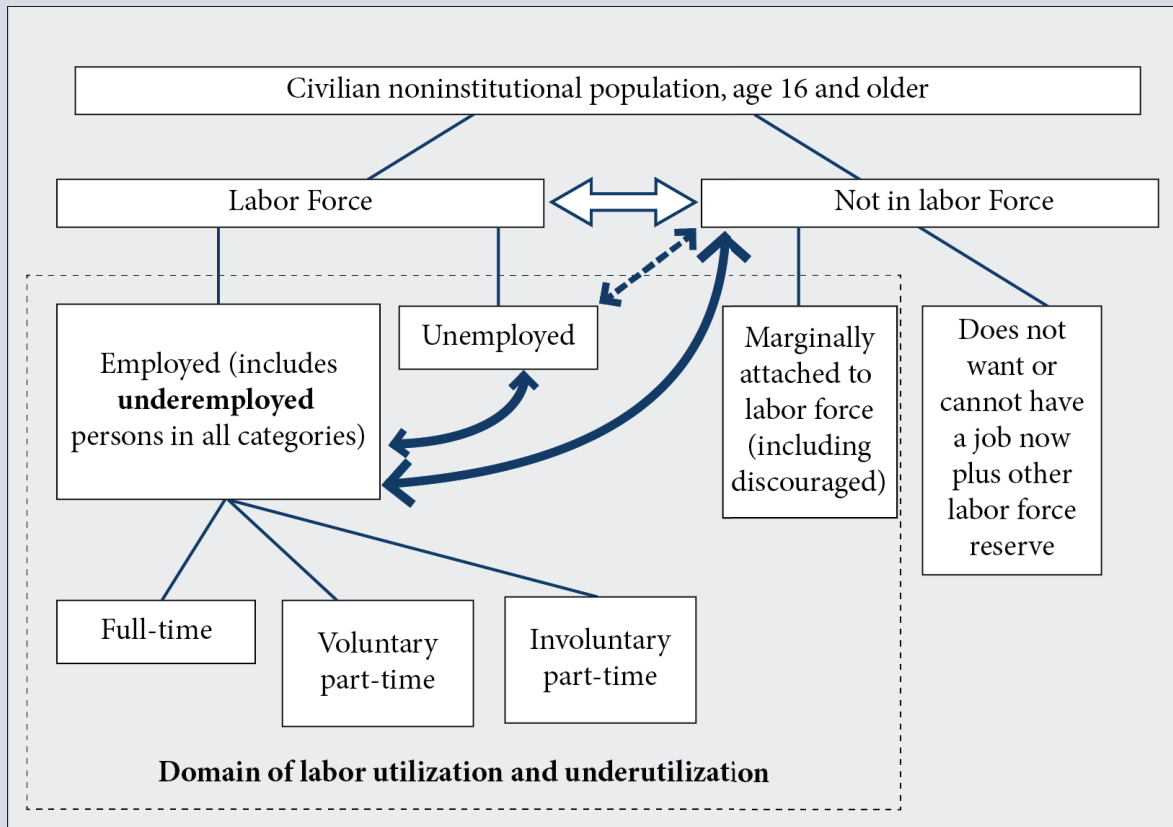
Improving education is important because

(i) a highly educated and productive workforce is a critical economic development asset; (ii) productivity rises with education; (iii) educated people are more likely to work; and (iv) it yields high private and social rates of return on investment. Workforce development must view all of education and other programs (e.g. adult education, career technical training, worker retraining, career readiness, etc.) as one system. Funding to support workforce development may require tax reform at state and local levels and should provide for flexibility as workforce needs and priorities change over time. Publicizing both private and public returns to education can encourage individuals to raise their own educational attainment levels, while also promoting public and legislative support for education.

The higher incomes that come with improved educational attainment and work skills would help increase personal income for the region as well as raise additional local (county and city) tax revenues. This is especially critical in regions with lower population and labor force growth rates but is still important in North AlabamaWorks, where population and labor force growth rates are higher than the state's as some counties are still lagging behind.

Regional workforce development and economic development are both necessary for a strong, well-diversified economy. Indeed, one cannot achieve success without the other.

LABOR UTILIZATION AND SUPPLY FLOWS



Source: Addy et al¹ and Canon et al²

The chart above presents labor utilization and supply flows that explain labor market dynamics in view of recent study findings. The civilian noninstitutional population age 16 and above is comprised of participants in the labor force and nonparticipants. The labor force is made of employed and unemployed persons; the unemployed do not have a job but are actively searching for work. Employed persons include fully employed and underemployed persons in all categories of work (full-time, voluntary part-time, and involuntary part-time). Nonparticipants in the labor force include retirees (voluntary and involuntary), people who do not want to or cannot work for various reasons (e.g., disability, caring for family members, in school or training, etc.), discouraged workers, and other labor force reserves. It has been suggested that a subgroup of nonparticipants referred to as the “waiting group” is more likely than the rest of the nonparticipants to take a job if wages and conditions are satisfactory, but does not actively search for work. It has been shown that between January 2003 and August 2013, the flow of nonparticipants into employment is 1.6 times that of unemployed persons transitioning into employment, which may be due to the presence of the waiting group.^{1,2} Nonparticipant flows to employment are larger in services, management, and professional occupations while unemployed flows to employment are higher in physically intensive occupations such as construction workers and miners. Industry effects should vary by the type and number of occupations they contain. This finding enhances the common understanding of labor market dynamics and influences workforce availability and skills gap analyses. Skill and spatial mismatches present additional complications to labor market dynamics. For example, unemployment can coexist with significant job availability.

¹Addy, S.N., Bonnal, M., and Lira, C. (2012). Towards a More Comprehensive Measure of Labor Underutilization: The Alabama Case, *Business Economics*, vol. 47(3).

²Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was “Unemployed”, *The Regional Economist*, January.

WORKFORCE SUPPLY

Labor Force Activity

The labor force includes all persons in the civilian noninstitutional population who are age 16 and over and either who have a job or are actively looking for one.

Typically, those who have no job and are not looking for one are not included (e.g. students, retirees, discouraged workers, and the disabled). Table 1.1 shows labor force information

Table 1.1 North AlabamaWorks Labor Force Information

2020 Annual Average				
	Labor Force	Employed	Unemployed	Rate (%)
Colbert	23,558	22,008	1,550	6.6
Cullman	38,310	36,660	1,650	4.3
DeKalb	30,736	29,348	1,388	4.5
Franklin	14,424	13,786	638	4.4
Jackson	22,840	21,637	1,203	5.3
Lauderdale	41,931	39,610	2,321	5.5
Lawrence	14,363	13,660	703	4.9
Limestone	44,624	42,724	1,900	4.3
Madison	187,247	178,579	8,668	4.6
Marion	13,034	12,373	661	5.1
Marshall	44,275	42,430	1,845	4.2
Morgan	58,899	56,265	2,634	4.5
Winston	10,017	9,542	475	4.7
North ALWorks	544,258	518,622	25,636	4.7
Alabama	2,230,118	2,099,062	131,056	5.9
U.S.	160,742,000	147,795,000	12,947,000	8.1
March 2021				
	Labor Force	Employed	Unemployed	Rate (%)
Colbert	23,292	22,383	909	3.9
Cullman	38,678	37,782	896	2.3
DeKalb	30,720	29,958	762	2.5
Franklin	14,432	14,084	348	2.4
Jackson	22,664	22,031	633	2.8
Lauderdale	41,594	40,308	1,286	3.1
Lawrence	14,296	13,888	408	2.9
Limestone	45,216	44,127	1,089	2.4
Madison	190,105	185,070	5,035	2.6
Marion	13,238	12,865	373	2.8
Marshall	44,319	43,251	1,068	2.4
Morgan	59,026	57,494	1,532	2.6
Winston	9,957	9,678	279	2.8
North ALWorks	547,537	532,919	14,618	2.7
Alabama	2,213,954	2,138,166	75,788	3.4
U.S.	160,397,000	150,493,000	9,905,000	6.2

Note: Not seasonally adjusted.

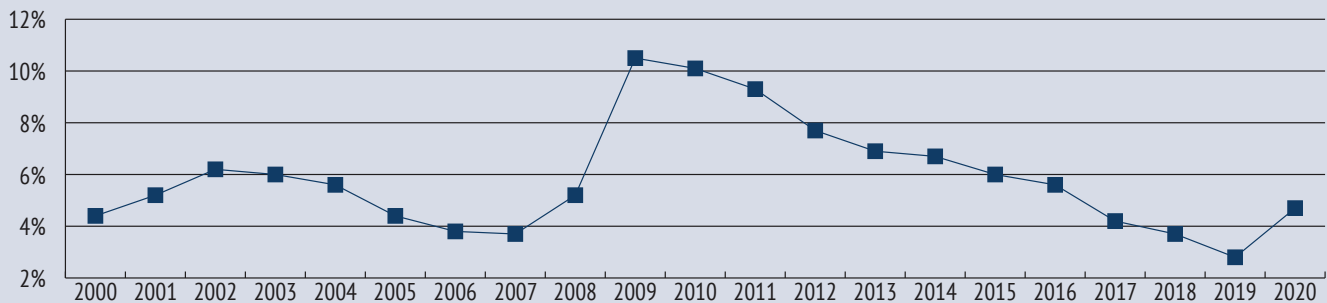
Source: Alabama Department of Labor and U.S. Bureau of Labor Statistics.

for the North AlabamaWorks region and its 13 counties for 2020 and March 2021. Alabama labor force information is available from the Labor Market Information (LMI) Division of the Alabama Department of Labor. LMI compiles data in cooperation with the U.S. Bureau of Labor Statistics.

By the end of 2019, regional and county unemployment had declined to record levels as region, the state, and nation enjoyed the longest economic expansion in decades but rose in 2020 due to the COVID-19 interruptions. The emergence of the COVID-19 pandemic in the first quarter of 2020 and the economic recession that followed led to a

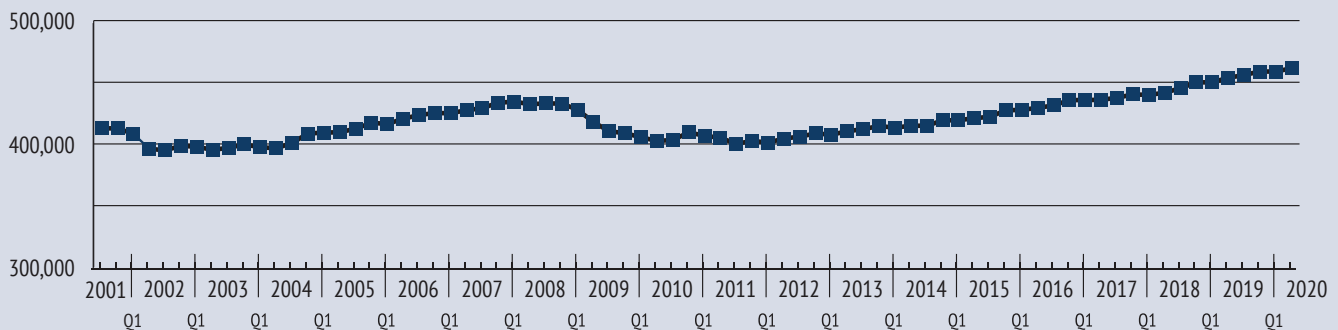
sharp increase in unemployment in the region. As personal protection equipment and testing became more available and Congress provided some relief through the CARES Act, businesses and employers resumed operations, albeit, at a staggered pace. This lowered unemployment significantly towards the end of 2020 and annual county unemployment ranged from 4.2 percent to 6.6 percent (4.7 percent for the region) for the year. The regional unemployment rate was lower than the statewide rate of 5.9 percent. A faster economic recovery continued in the region aided by the availability of COVID-19 vaccines and more economic relief

Figure 1.1 North AlabamaWorks Unemployment Rate



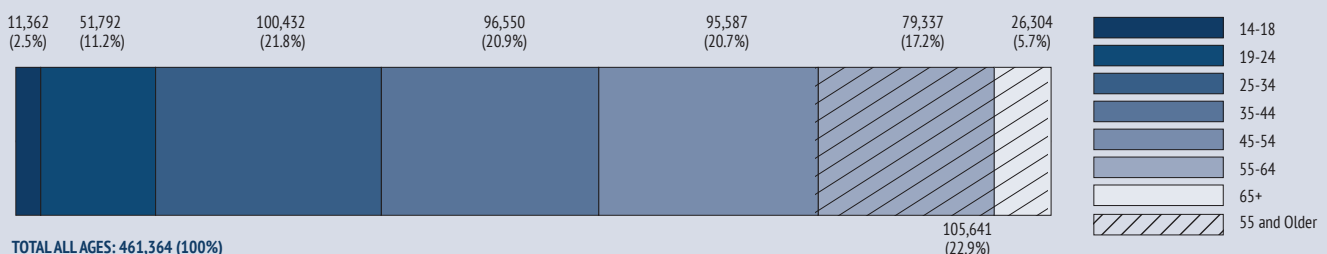
Source: Alabama Department of Labor.

Figure 1.2 North AlabamaWorks Nonagricultural Employment



Source: Alabama Department of Labor and U.S. Census Bureau.

Figure 1.3 Nonagricultural Employment - Workers by Age Group (First Quarter 2020)



Source: U.S. Census Bureau, Local Employment Dynamics Program.

Note: Rounding errors may be present. Nonagricultural employment is by place of work, not residence.

through the Consolidated Appropriations Act, 2021 and American Rescue Plan Act, 2021. As of March 2021, county unemployment rates declined significantly and ranged from 2.3 percent in Cullman County to 3.9 percent in Colbert, with 2.7 percent for the region. Only Colbert County had higher unemployment rate than Alabama's 3.4 percent in March 2021.

The region's annual unemployment rates from 2000 to 2020 are shown in Figure 1.1 and were low before the 2001 and 2007 economic recessions. Successful state and local economic efforts brought unemployment to record lows in 2006 and 2007. However, the recession that followed led to major employment losses and raised the regional unemployment rate to double digits in 2009 and 2010. Afterward, the regional economy enjoyed the longest economic expansion in decades and by 2019 the unemployment rate had declined to a record low of 2.8 percent. However, in 2020 regional unemployment rose to 4.7 percent due to job losses and economic disruptions brought on by the COVID-19 pandemic and recession. Year-to-date monthly labor force data indicate significantly lower regional unemployment for 2021 than 2020 but economic recovery is currently facing supply chain backlogs, COVID-19 persistence, and labor supply limitations which require attention.

Nonagricultural employment of the region's residents

averaged 419,692 quarterly from the second quarter of 2001 to the first quarter of 2020 (Figure 1.2). Total employment was lowest in the second quarter of 2002 at 394,764 jobs and highest in the first quarter of 2020 at 461,363, despite COVID-19 pandemic interruptions. The number of jobs in the region declined from 434,247 in the fourth quarter of 2007 to 400,086 in the second quarter of 2011 due to the 2008 recession but gradually rose back and surpassed pre-recession levels. By the third quarter of 2016, total civilian employment for the region had reached 435,533 surpassing the pre-recession levels. The number of jobs continued to grow reaching record high numbers for the entire period in the first quarter 2020. Total employment is expected to be lower in the subsequent quarters due to the effect of the COVID-19 led-recession.

Figure 1.3 shows worker distribution by age in North AlabamaWorks for the first quarter of 2020. Older workers, age 55 and over, comprise 22.9 percent of the region's nonagricultural employment, just above the state's 22.8 percent. The region has a smaller share of workers who are age 65 and over, 5.7 percent versus 6.0 percent for Alabama. For the region to meet long-term occupational projections for growth and replacement, labor force participation of younger residents must increase or older workers may have to work longer.

Commuting Patterns

More residents commute out of the region for work than nonresidents commute in (Table 1.2). In 2005 commuter outflow exceeded inflow by 7,875 people. Both commuter outflow and inflow levels proportionately increased over the years, and as a result the net commuter outflow in 2018 (8,345) was just slightly above the 2005 level. There is also significant commuting within the region, with the highest in- and out-commuting taking place in Madison County. About 17 percent of North AlabamaWorks workers in-commute from other regions in the state: 23,200 from Central Six, 11,600 from East, 6,500 from Central, and 6,000 from West AlabamaWorks. On the other hand, about 19 percent of North AlabamaWorks residents out-commute to other regions for work. About 33,300 residents out-commute to Central Six, 8,600 to East, 7,500 to Central, and 5,000 to West AlabamaWorks regions. By state, Tennessee accounts

for most of the region's out- and in-commuting workforce: 10,100 out-commuters and 10,400 in-commuters.

Table 1.2 also shows one-way average commute time and distance for the past six years. Average commute distance and time were down in 2020 from 2019 implying that congestion eased in the region, perhaps due to COVID-19 interruptions and improvement in regional road networks. As the regional economy continues to recover and population grows, congestion is likely to pose challenges especially within the Huntsville and Decatur metro areas. Transportation infrastructure and systems must be maintained and developed properly to ensure that the flow of goods and the movement of workers are not interrupted. Congestion can cause interruptions that delay or slow economic development.

Table 1.2 North AlabamaWorks Commuting Patterns

Year	Inflow		Outflow	
2005	50,858		58,733	
2006	56,354		54,012	
2007	60,268		70,397	
2008	65,393		68,987	
2009	64,327		69,405	
2010	65,572		69,815	
2011	65,136		71,505	
2012	64,567		71,465	
2013	65,898		74,337	
2014	67,143		76,454	
2015	65,539		74,188	
2016	70,056		76,692	
2017	73,173		80,577	
2018	73,200		81,545	

North ALWorks Counties	Inflow, 2018		Outflow, 2018	
	Number	Percent	Number	Percent
Colbert	12,540	6.5	11,255	5.6
Cullman	12,114	6.3	17,681	8.7
DeKalb	7,971	4.1	12,856	6.4
Franklin	5,384	2.8	7,289	3.6
Lauderdale	11,990	6.2	16,986	8.4
Lawrence	2,285	1.2	10,636	5.3
Limestone	13,484	7.0	25,246	12.5
Jackson	6,128	3.2	10,003	4.9
Madison	68,585	35.6	33,985	16.8
Marion	5,044	2.6	7,081	3.5
Marshall	16,944	8.8	18,675	9.2
Morgan	26,403	13.7	25,522	12.6
Winston	3,857	2.0	4,985	2.5

Percent of Workers						
Average commute time (one-way)	2015	2016	2017	2018	2019	2020
Less than 20 minutes	51.2	51.5	55.0	49.1	48.7	46.8
20 to 40 minutes	28.1	28.9	26.4	27.7	29.6	29.7
40 minutes to an hour	9.1	8.9	8.3	9.8	8.6	7.8
More than an hour	3.9	3.5	3.4	2.6	3.8	3.8
Average commute distance (one-way)	2015	2016	2017	2018	2019	2020
Less than 10 miles	42.3	41.6	46.3	41.3	39.6	39.9
10 to 25 miles	34.2	37.6	34.9	35.6	35.7	35.9
25 to 45 miles	14.0	11.4	11.3	14.3	14.8	14.7
More than 45 miles	6.3	7.0	6.0	5.5	7.5	7.1

Note: Rounding errors may be present.

Source: U.S. Census Bureau; Alabama Department of Labor; and Center for Business and Economic Research, The University of Alabama.

Population

The North AlabamaWorks population count in 2010 was 1,103,284, a 10.7 percent increase from 2000 (Table 1.3). The region had much higher population growth than Alabama's 7.5 percent increase. The population grew in Cullman, DeKalb, Franklin, Lauderdale, Limestone, Madison, Marshall, and Morgan counties but shrank in the other five. Population growth was greatest in Limestone County followed by Madison and Marshall while Marion and Winston had the greatest decline. The 2020 decennial census results show an 8.2 percent growth of the region's population since 2010 compared to 5.1 percent increase for Alabama. The region's population growth is also faster than the nationwide growth of 7.4 percent. Most of the population growth occurred in Limestone and Madison counties. The population grew in nine counties and declined in four. Marion County had the highest population decline, followed by Winston.

Table 1.4 shows North AlabamaWorks' population decennial counts, estimates, and projections by age group up to 2040. The population aged 65 and over grows rapidly after 2010, with the first of the baby boom generation turning 65. This is a major factor behind regional population growth projections. The prime working age group (20-64) and youth (0-19) populations are expected to grow at a relatively lower rate than the total population. Prime working age population growth will be 3.3 percent through 2028 and rise to 13.1 percent by 2040. In contrast, the total population will grow at 8.7 percent by 2028 and 21.0 percent by 2040. This poses a challenge for regional workforce development. The region must continue investing in amenities and infrastructure or other appropriate policies to attract new and younger residents in both the short- and long-term to meet labor force needs.

Table 1.3 North AlabamaWorks Population

County	1990 Census	2000 Census	2010 Census	2020 Census	Change 2000-2010		Change 2010-2020	
					Number	Percent	Number	Percent
Colbert	51,666	54,984	54,428	57,227	-556	-1.0	2,799	5.1
Cullman	67,613	77,483	80,406	87,866	2,923	3.8	7,460	9.3
DeKalb	54,651	64,452	71,109	71,608	6,657	10.3	499	0.7
Franklin	27,814	31,223	31,704	32,113	481	1.5	409	1.3
Jackson	47,796	53,926	53,227	52,579	-699	-1.3	-648	-1.2
Lauderdale	79,661	87,966	92,709	93,564	4,743	5.4	855	0.9
Lawrence	31,513	34,803	34,339	33,073	-464	-1.3	-1,266	-3.7
Limestone	54,135	65,676	82,782	103,570	17,106	26.0	20,788	25.1
Madison	238,912	276,700	334,811	388,153	58,111	21.0	53,342	15.9
Marion	29,830	31,214	30,776	29,341	-438	-1.4	-1,435	-4.7
Marshall	70,832	82,231	93,019	97,612	10,788	13.1	4,593	4.9
Morgan	100,043	111,064	119,490	123,421	8,426	7.6	3,931	3.3
Winston	22,053	24,843	24,484	23,540	-359	-1.4	-944	-3.9
North AlabamaWorks Total	876,519	996,565	1,103,284	1,193,667	106,719	10.7	90,383	8.2
Alabama	4,040,587	4,447,100	4,779,736	5,024,279	332,636	7.5	244,543	5.1
United States	248,709,873	281,421,906	308,745,538	331,449,281	27,323,632	9.7	22,703,743	7.4

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

Table 1.4 Population by Age Group and 2040 Projections

Age Group	2000	2010	2018	2028	2030	2035	2040
0-19	273,587	290,913	289,804	305,635	307,352	317,116	330,772
20-24	61,772	69,805	72,499	81,703	82,806	84,294	86,917
25-29	65,956	69,082	78,404	78,114	79,167	82,856	84,589
30-34	70,382	66,762	71,817	79,777	81,450	84,824	89,079
35-39	81,229	71,320	71,872	77,757	80,486	85,537	89,399
40-44	79,116	75,214	69,525	77,201	76,547	84,055	89,745
45-49	70,081	85,135	77,259	77,368	80,756	79,750	87,867
50-54	65,493	81,710	81,656	75,291	74,656	83,695	83,005
55-59	53,774	70,727	85,257	77,959	77,321	76,381	86,087
60-64	45,997	64,547	76,506	82,129	79,234	78,419	77,865
65+	129,178	158,069	200,991	265,108	279,360	301,438	317,110
20-64 Total	593,800	654,302	684,796	707,299	712,423	739,811	774,553
Total Population	996,565	1,103,284	1,175,590	1,278,042	1,299,135	1,358,364	1,422,435
Change from 2018							
0-19				5.5%	6.1%	9.4%	14.1%
20-64				3.3%	4.0%	8.0%	13.1%
Total Population				8.7%	10.5%	15.5%	21.0%

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau.

Educational Attainment

Educational attainment from 2015 to 2019 for North AlabamaWorks residents who were 25 years old and over is shown in Table 1.5 and Figure 1.6. In that period 85.3 percent of the region's residents graduated from high school, which is below Alabama's 86.2 percent. The region's educational attainment of bachelor's or higher degrees is 26.1 percent and is above the state's 25.5 percent. Madison County had the highest educational attainment followed by Lauderdale for high school graduate or higher, and by

Limestone for bachelor's degree or higher. DeKalb County had the lowest attainment for high school graduate or higher while Lawrence had the lowest for bachelor's degree or higher. Educational attainment in all the counties was below Alabama's, except for Madison County and high school graduates for Lauderdale. Job skills rise with education, so educational attainment is important as high-wage jobs in the 21st century demand more skill sets.

Underemployment and Available Labor

Labor force data are often limited to information on the employed and the unemployed that is available from government sources. However, this information is not complete from the perspective of employers. New or expanding employers are also interested in underemployment because current workers are potential employees. In fact, experience requirements in job ads are evidence that many prospective employers look beyond the unemployed for workers.

Workers in occupations that underutilize their

experience, training, and skills are underemployed. These workers might look for other work because their current wages are below what they believe they can earn or because they wish to not be underemployed. Underemployment occurs for various reasons including (i) productivity growth, (ii) spousal employment and income, and (iii) family constraints or personal preferences. Underemployment is unique in different areas because of the various contributing factors combined with each area's economic, social, and geographic characteristics.

Per Capita Income

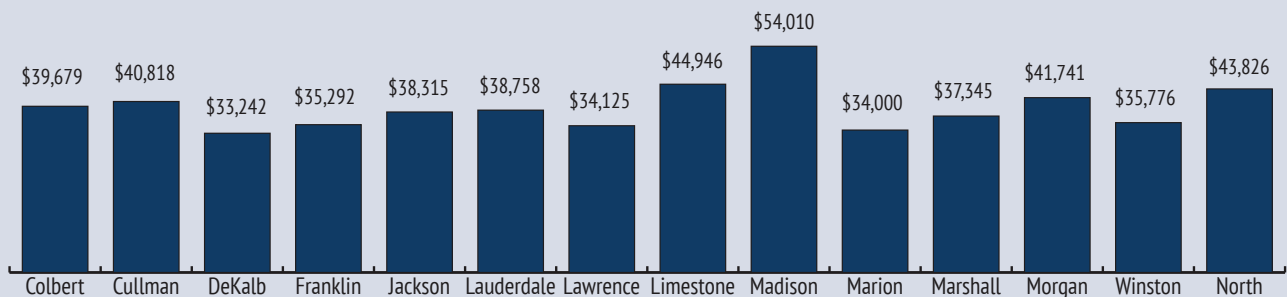
Per capita income (PCI) in North AlabamaWorks was \$43,826 in 2019 (Figure 1.4), up 49.7 percent from 2005 and just \$319 below the state average of \$44,145. Figure 1.4 shows regional PCI by county. Madison County had the highest PCI with \$54,010 followed by Limestone at \$44,946 and Morgan with \$41,741. Madison was the only county in the region with a PCI above the state average. At \$33,242 DeKalb County had the lowest PCI followed by Marion with \$34,000.

Figure 1.4 North AlabamaWorks Per Capita Income



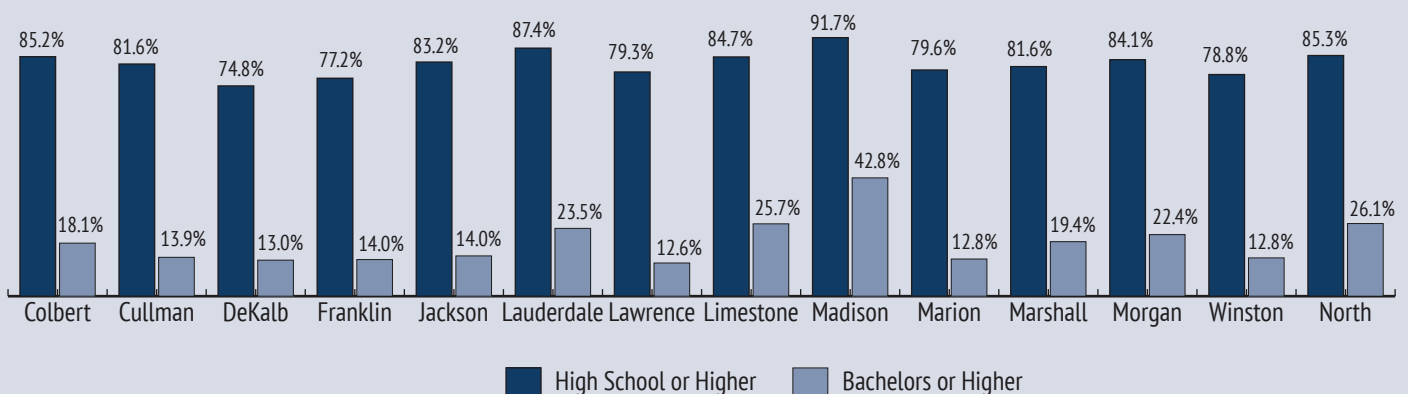
Source: U.S. Bureau of Economic Analysis and Center for Business and Economic Research, The University of Alabama.

Figure 1.5 Regional Per Capita Income, 2019



Source: U.S. Bureau of Economic Analysis and Center for Business and Economic Research, The University of Alabama.

Figure 1.6 Educational Attainment of Population 25 Years and Over, 2015-2019



Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau, American Community Survey.

Table 1.5 Educational Attainment of Population 25 Years and Over, 2015-2019

	Colbert	Cullman	DeKalb	Franklin	Jackson	Lauderdale	Lawrence	Limestone
Total	38,959	57,726	47,990	20,786	36,999	63,606	23,314	65,942
No schooling completed	345	756	1,268	449	462	648	325	891
Nursery to 4th grade	86	198	820	262	122	232	190	258
5th and 6th grade	375	714	1,218	602	391	218	138	912
7th and 8th grade	864	1,463	2,293	767	932	1,562	917	1,547
9th grade	942	1,563	1,830	766	716	1,534	841	1,832
10th grade	1,242	2,229	2,087	1,004	1,461	1,522	961	2,009
11th grade	1,247	2,271	1,537	513	1,366	1,423	959	1,707
12th grade, no diploma	682	1,454	1,019	376	768	887	494	942
High school graduate/equivalent	14,740	19,668	16,431	7,601	15,177	22,873	9,605	20,044
Some college, less than 1 year	1,989	4,534	3,182	1,308	2,177	4,016	1,160	3,947
Some college, 1+ years, no degree	6,395	8,529	5,583	2,483	4,705	9,372	3,029	9,509
Associate degree	2,982	6,343	4,476	1,748	3,547	4,371	1,765	5,373
Bachelor's degree	4,492	5,121	3,727	1,819	3,525	9,455	1,970	11,450
Master's degree	2,108	2,251	1,956	815	1,284	4,131	819	4,418
Professional school degree	334	464	391	144	184	722	73	638
Doctorate degree	136	168	172	129	182	640	68	465
			Madison	Marion	Marshall	Morgan	Winston	North
Total			247,760	21,272	63,955	82,478	17,156	787,943
No schooling completed			1,811	322	1,532	1,386	257	10,452
Nursery to 4th grade			622	136	641	326	179	4,072
5th and 6th grade			1,419	339	767	1,242	258	8,593
7th and 8th grade			2,646	885	1,470	2,079	518	17,943
9th grade			3,630	609	1,506	1,964	648	18,381
10th grade			3,774	1,057	2,068	2,373	746	22,533
11th grade			3,705	682	2,652	2,279	675	21,016
12th grade, no diploma			2,955	315	1,125	1,488	354	12,859
High school graduate/equivalent			51,126	7,408	19,920	25,075	6,556	236,224
Some college, less than 1 year			13,802	1,647	4,569	5,273	1,459	49,063
Some college, 1+ years, no degree			36,187	3,196	9,783	13,248	2,080	114,099
Associate degree			20,148	1,961	5,535	7,269	1,225	66,743
Bachelor's degree			64,350	1,683	8,306	12,670	1,252	129,820
Master's degree			33,016	913	3,221	4,374	682	59,988
Professional school degree			3,767	88	526	980	169	8,480
Doctorate degree			4,802	31	334	452	98	7,677

Source: Center for Business and Economic Research, The University of Alabama and U.S. Census Bureau, American Community Survey.

The existence of underemployment identifies economic potential that is not being realized. It is extremely difficult to measure this economic potential because of uncertainties regarding additional income that the underemployed can bring to an area. It is clear, however, that underemployment provides opportunities for selective job creation and economic growth. A business that needs skills prevalent among the underemployed could locate in areas with such workers regardless of the local unemployment rates. A low unemployment rate, which may falsely suggest limited labor availability, is therefore not a hindrance to the business.

The underemployed present a significant labor pool because they tend to respond to job opportunities that they believe are better for reasons that include (i) higher income, (ii) more benefits, (iii) superior terms and conditions of employment, and (iv) a better match with skills, training, and experience. The underemployed also create opportunities for entry level workers as they leave lower-paying jobs for better-paying ones. Even if their previously held positions are lost or not filled (perhaps due to low unemployment or adverse economic conditions), there is economic growth in gaining higher-paying jobs. Such income growth boosts consumption, savings, and tax collections. Quantifying the size of the underemployed is a necessary first step in considering this group for economic development, workforce training, planning, and other purposes. It is important to note that the underemployed can take on more

responsibilities and earn more income, but they cannot be counted on to address possible future worker shortages as they are already employed.

North AlabamaWorks had an underemployment rate of 20.3 percent in 2020/2021. Applying this rate to March 2021 labor force data means that 108,076 employed residents were underemployed (Table 1.6). Adding these underemployed workers to the unemployed persons in the region gives a total available labor pool of 122,694. This is 8.4 times the number of unemployed residents and is a more realistic measure of the available labor pool in the region. Prospective employers must be able to offer the underemployed higher wages, better benefits or terms of employment, or some other incentives to induce them to change jobs. By county, underemployment rates ranged from 10.5 percent for Morgan County to 24.2 percent for Marion. Madison County had the largest available labor pool followed by Limestone and Winston had the smallest. The underemployed workers in North AlabamaWorks are looking for a better job and are willing to commute farther and longer for such a job. For the one-way commute, 46.0 percent are prepared to travel for 20 or more minutes longer and 32.2 percent will go 20 or more extra miles for a better job. In contrast, 37.7 percent of all employees are prepared to commute for 20 or more minutes and 27.1 percent are willing to travel for 20 or more miles for such a job.

The underemployment rates for counties, AlabamaWorks

Table 1.6 Underemployed and Available Labor by County

	North	Colbert	Cullman	DeKalb	Franklin	Jackson	Lauderdale	Lawrence
Labor force	547,537	23,292	38,678	30,720	14,432	22,664	41,594	14,296
Employed	532,919	22,383	37,782	29,958	14,084	22,031	40,308	13,888
Underemployment rate	20.3%	19.1%	20.5%	21.9%	17.2%	21.9%	24.1%	22.8%
Underemployed workers	108,076	4,280	7,738	6,567	2,428	4,829	9,714	3,164
Unemployed	14,618	909	896	762	348	633	1,286	408
Available labor pool	122,694	5,189	8,634	7,329	2,776	5,462	11,000	3,572
	Limestone	Madison	Marion	Marshall	Morgan	Winston		
Labor force	45,216	190,105	13,238	44,319	59,026	9,957		
Employed	44,127	185,070	12,865	43,251	57,494	9,678		
Underemployment rate	22.5%	19.9%	24.2%	19.3%	10.5%	23.3%		
Underemployed workers	9,946	36,755	3,112	8,339	6,054	2,254		
Unemployed	1,089	5,035	373	1,068	1,532	279		
Available labor pool	11,035	41,790	3,485	9,407	7,586	2,533		

Note: Rounding errors may be present. Based on March 2021 labor force data and 2020/2021 underemployment rates.

Source: Center for Business and Economic Research, The University of Alabama and Alabama Department of Labor.

regions, and the state were determined from an extensive survey of the state's workforce. A total of 2,150 complete responses were obtained from North AlabamaWorks. About 56 percent (1,193 respondents) were employed, of whom 242 stated that they were underemployed. From most important to the least, the primary reasons given for being underemployed are low wages at the available jobs; other family or personal obligations; a lack of job opportunities in their area; living too far from jobs; child care responsibilities; retirement; and owning a house in their area. Ongoing economic development efforts can help mitigate many of the issues causing underemployment. Some of the listed barriers underscore workforce challenges related to the COVID-19 pandemic. Nonworkers cite retirement and disability or other health concerns as the main reasons for their status, but some also cite social security limitations as an additional key factor. Such workers may become part of the labor force if those problems can be addressed. Indeed, a recent study found that the flow of labor force nonparticipants to employment status was 60.0 percent more than that of unemployed workers who gained employment.³ This implies that the region's available labor pool could be larger than estimated in this report.

A comparison of underemployed workers to the overall workforce in North AlabamaWorks region shows that:

- Fewer work full-time, and more of the part-timers would like to work full-time.
- Slightly more hold multiple jobs.
- They have shorter commute times but longer times distances.
- By occupation more are in community and social science; legal; protective service; food preparation and serving related; building and grounds cleaning and maintenance; sales and related; production; and other occupations.
- More are in agriculture, forestry, fishing, and hunting; construction; retail trade; health care and social assistance; and accommodation and food services industries.
- They earn less and have shorter job tenure.

- More were laid-off or furloughed from their jobs in the past quarter and fewer have been recalled to work.
- Fewer believe their jobs fit well with their education, training, skills, and experience.
- More believe they are qualified for a better job based on their education and training, skills, and experience.
- Interestingly, more would leave their current jobs for higher income only if the offer pays 5-15 percent or over 50 percent more than their current jobs.
- More are willing to extend their commute time and distance for better jobs.
- Fewer are satisfied with their current jobs.
- More are willing to train for a better job, even if they have to pay full cost of training.
- More have sought better jobs in the preceding quarter; 32.7 percent of underemployed workers sought a better job compared to 17.5 percent of all workers.
- Their median age is 52 years, which a year younger than that of all workers.
- They have lower educational attainment; fewer have bachelors or post-graduate degrees.
- Fewer are married and more are males.
- More are African-American or other non-white racial groups.

Table 1.7 shows the detailed survey results on job satisfaction and willingness to train. Responses for overall job satisfaction as well as various aspects of the job were obtained. In general, most of the region's workers (81.4 percent) are satisfied or completely satisfied with their jobs. Workers are most satisfied with the work that they do and least satisfied with the earnings they receive. Fewer underemployed workers are satisfied with their jobs (59.9 percent). The underemployed are also most satisfied with their work and much more dissatisfied with their earnings than the general region's workers.

³ Canon, M.E., Kudlyak, M., and Reed, M. (2014). Not Everyone Who Joins the Ranks of the Employed was "Unemployed", *The Regional Economist*, January.

Workers are generally willing to train for a new or better job, with the underemployed being much more willing (61.1 percent versus 52.5 percent). However, the willingness to train is strongly influenced by who pays for the cost of training. Workers typically do not wish to pay for the training and so their willingness is highest when the cost is fully borne by the government and lowest when the

trainee must pay the full costs. The underemployed are more willing to train for the new or better job even if they have to bear the full cost. The results strongly show that workers expect the government to bear at least part of the training cost. This expectation may result from worker awareness of government workforce programs that provide such assistance.

Table 1.7 Job Satisfaction and Willingness to Train (Percent)

Job Satisfaction					
	Completely Dissatisfied	Dissatisfied	Neutral	Satisfied	Completely Satisfied
Employed					
Overall	2.2	3.5	12.3	27.5	53.9
Earnings	5.5	6.6	18.1	28.1	41.2
Retention	1.4	2.9	7.3	17.0	70.4
Work	0.5	1.6	7.1	25.0	65.6
Hours	2.8	3.4	10.5	19.6	63.5
Shift	1.8	2.8	8.0	15.0	72.0
Conditions	1.6	3.1	11.7	23.2	59.8
Commuting Distance	3.1	5.0	11.0	16.2	64.7
Underemployed					
Overall	6.6	8.7	23.6	30.2	29.8
Earnings	15.3	13.6	25.6	25.2	19.4
Retention	4.6	6.2	21.9	21.9	55.4
Work	2.1	4.1	14.1	30.2	49.6
Hours	8.3	5.8	15.7	21.9	47.9
Shift	4.1	3.7	13.2	18.2	60.3
Conditions	4.6	7.4	19.4	23.1	44.2
Commuting Distance	8.3	6.2	12.0	18.6	54.6
Willingness to Train					
	Completely Unwilling	Unwilling	Neutral	Willing	Completely Willing
Employed					
For a new or better job	21.1	7.4	17.2	12.8	39.7
If paid by trainee	46.4	21.9	16.5	4.5	6.9
If paid by trainee and government	17.0	13.0	33.0	18.0	14.5
If paid by government	6.8	4.5	10.9	15.9	60.0
Underemployed					
For a new or better job	15.2	5.7	17.1	10.4	50.7
If paid by trainee	49.2	16.8	15.1	7.8	7.3
If paid by trainee and government	16.2	11.7	29.1	21.2	16.2
If paid by government	2.2	4.5	7.3	12.9	71.5

Note: Rounding errors may be present.

Source: Center for Business and Economic Research, The University of Alabama.

WORKFORCE DEMAND

Industry Mix

The manufacturing sector was the region's leading employer with 92,717 jobs in the first quarter of 2020 (Table 1.8). Rounding out the top five industries by employment are health care and social assistance; retail trade; professional, scientific, and technical services; and accommodation and food services. These five industries provided 293,829 jobs; 63.7 percent of the region's total. The average monthly wage across all industries in the region was \$4,482. Two of the leading employers—professional, scientific, and technical services and manufacturing—paid more than the

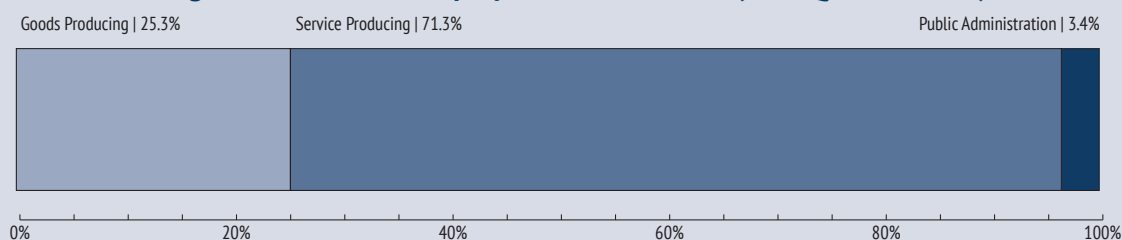
region's average. The highest average monthly wages were in professional, scientific, and technical services at \$9,126; management of companies and enterprises at \$6,166; finance and insurance at \$5,764; utilities at \$5,694; wholesale trade at \$5,630; mining at \$5,133; and manufacturing with \$5,014. Accommodation and food services paid the least at \$1,595. Newly hired monthly earnings across all sectors averaged \$2,778, about 62 percent of the region's average monthly wage. Professional, scientific, and technical services paid the highest average wage for new hires at \$6,363,

Table 1.8 Industry Mix (First Quarter 2020)

Industry by 2-digit NAICS Code	Total Employment	Share	Rank	Average Monthly Wage	Average Monthly New Hire Earnings
11 Agriculture, Forestry, Fishing and Hunting	2,579	0.56%	19	\$3,509	\$2,655
21 Mining	477	0.10%	20	\$5,133	\$4,278
22 Utilities	3,412	0.74%	17	\$5,694	\$3,431
23 Construction	20,953	4.54%	8	\$4,386	\$3,882
31-33 Manufacturing	92,717	20.1%	1	\$5,014	\$3,525
42 Wholesale Trade	14,543	3.2%	10	\$5,630	\$3,733
44-45 Retail Trade	57,216	12.4%	3	\$2,781	\$1,692
48-49 Transportation and Warehousing	12,977	2.8%	11	\$4,098	\$3,364
51 Information	4,183	0.9%	16	\$5,614	\$3,943
52 Finance and Insurance	10,477	2.3%	12	\$5,764	\$3,271
53 Real Estate and Rental and Leasing	4,620	1.0%	14	\$3,689	\$2,826
54 Professional, Scientific, and Technical Services	45,616	9.9%	4	\$9,126	\$6,363
55 Management of Companies and Enterprises	2,702	0.6%	18	\$6,166	\$3,762
56 Administrative and Support and Waste Management and Remediation Services	27,682	6.0%	7	\$2,980	\$2,217
61 Educational Services	34,214	7.4%	6	\$3,543	\$1,346
62 Health Care and Social Assistance	58,128	12.6%	2	\$3,967	\$2,398
71 Arts, Entertainment, and Recreation	4,559	1.0%	15	\$1,643	\$1,474
72 Accommodation and Food Services	40,152	8.7%	5	\$1,595	\$1,131
81 Other Services (except Public Administration)	8,384	1.8%	13	\$3,039	\$2,060
92 Public Administration	15,770	3.42%	9	\$3,461	\$2,203
ALL INDUSTRIES	461,363	100.00%		\$4,482	\$2,778

Note: Rounding errors may be present.

Source: Alabama Department of Labor and U.S. Census Bureau.

Figure 1.7 Alabama Employment Distribution (First Quarter 2020)

Source: Alabama Department of Labor and U.S. Census Bureau.

followed by mining at \$4,278 and information at \$3,943. Accommodation and food services paid the lowest new hire average monthly wage at \$1,131.

By broad industry classification, service providing industries generated 71.3 percent of jobs in first quarter

2020 (Figure 1.7). Goods producing industries were next with 25.3 percent, and public administration accounted for 3.4 percent. The distribution is for all nonagricultural jobs in North AlabamaWorks, but there is significant variation by county.

Job Creation and Net Job Flows

On average, 17,818 jobs were created per quarter from second quarter 2001 to first quarter 2020. Figure 1.8 shows job creation and job flows dropped during the last recession. Since the second quarter of 2010, quarterly job creation fluctuated without any significant improvement but declined to record low levels in the first quarter of 2020 as the COVID-19 pandemic disrupted the economy. Over the

period, quarterly net job flows fluctuated between losses of 15,177 jobs in the first quarter of 2020 to gains of 5,997 jobs in the second quarter of 2004. Job creation refers to the number of new jobs that are created either by new area businesses or through the expansion of existing firms. Net job flows reflect the difference between current and previous employment at all businesses.

High-Demand, Fast-Growing, High-Earning, and Sharp-Declining Occupations

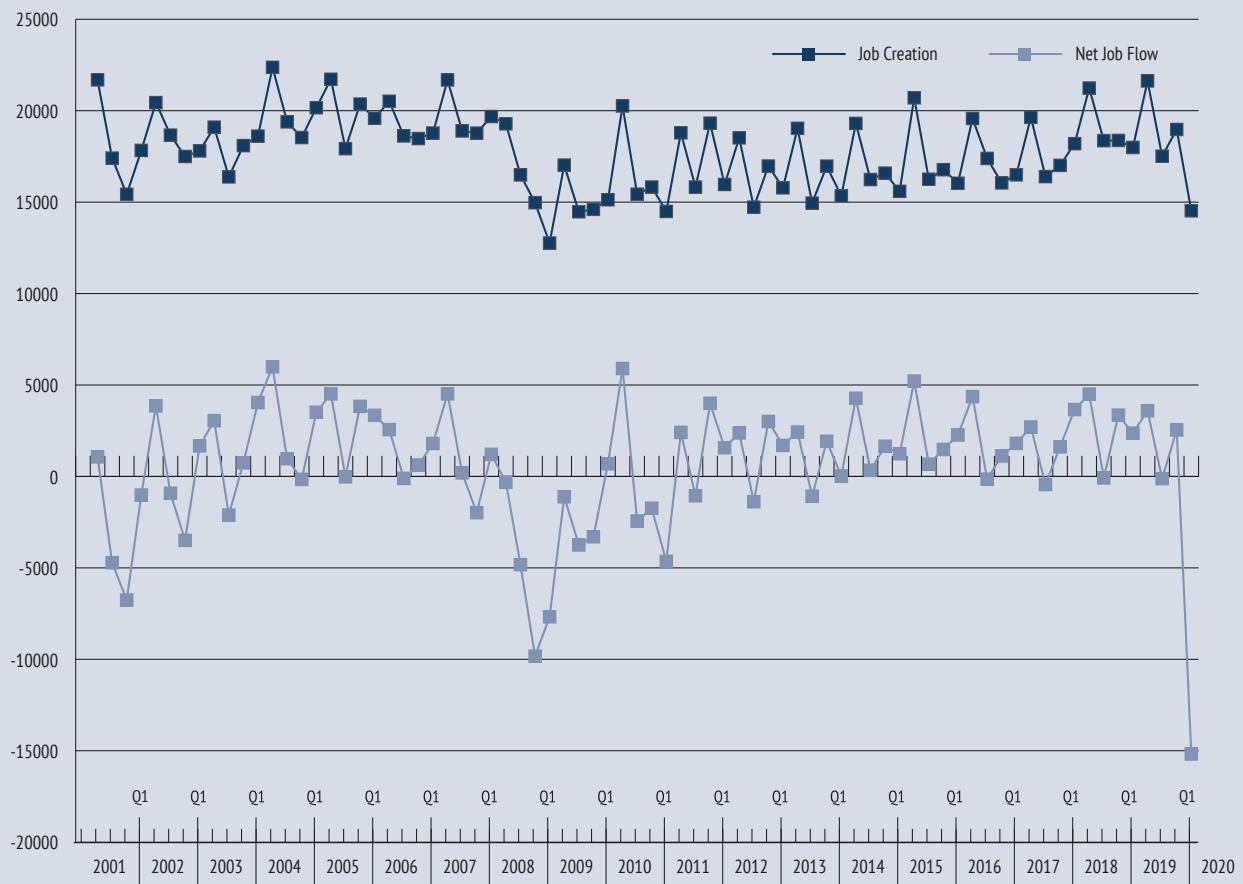
Excluding occupational categories, there are 734 single occupations in North AlabamaWorks. Table 1.9 shows the 40 occupations that are expected to be in high-demand, ranked by projected average annual job openings over the 2018 to 2028 period. Many of these occupations are common to three of the five largest employment sectors identified earlier in Table 1.8: health care and social assistance; manufacturing; and professional, scientific, and technical services. Thus, these sectors will continue to dominate employment in the region.

The top five high-demand occupations are Combined Food Preparation and Serving Workers, Including Fast Food; Retail Salespersons; Assemblers and Fabricators, All Other, Including Team Assemblers; Laborers and Freight, Stock, and Material Movers, Hand; and Farmworkers and Laborers, Crop, Nursery, and Greenhouse. Four of the high-demand occupations are also fast-growing. This means that these

four occupations have a minimum annual growth rate of 2.26 percent, which is much faster than the regional and state occupational growth rates of 0.64 percent and 0.48 percent, respectively.

The top 20 fastest growing occupations ranked by projected growth of employment are listed in Table 1.10. These fast-growing occupations are related to healthcare and professional, scientific, and technical services. The top five fast-growing occupations are Occupational Therapy Assistants; Painters, Transportation Equipment; Information Security Analysts; Statisticians; and Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic.

Table 1.11 shows the top 50 high-earning occupations in the region. These occupations are mainly in health, management, postsecondary education, and engineering fields. Eight of the top 10 listed are in health-related occupations and other two are management and computer

Figure 1.8 North AlabamaWorks Job Creation and Net Job Flows

Source: Alabama Department of Labor and U.S. Census Bureau.

science occupations. Any discussion of earnings must consider that wages vary with experience. Occupations with the highest average wages may not necessarily have the highest entry-level wages. The lowest mean high-earning salary is \$98,098 for Operations Research Analysts and the highest is \$275,716 for Anesthesiologists.

The selected top high-earning occupations are generally not fast-growing or in high-demand. Only one occupation—Software Developers, Applications—is in all three categories (Table 1.9, Table 1.10, and Table 1.11). Eight occupations are both high-earning and high-demand and four are both high-earning and fast-growing..

Of the region's 734 occupations, 124 are expected to decline over the 2018 to 2028 period. Employment in the 20 sharpest declining occupations is expected to drop by a minimum of 20 jobs and at least two percent over the period (Table 1.12). No efforts should be made to sustain these occupations because their decline is due to structural changes in the economy of the region.

Table 1.9 Selected High-Demand Occupations (Base Year 2018 and Projected Year 2028)

Occupation	Average Annual Job Openings		
	Total	Due to Growth	Due to Separations
Combined Food Preparation and Serving Workers, Including Fast Food	3,095	195	2,900
Retail Salespersons	2,325	25	2,300
Assemblers and Fabricators, All Other, Including Team Assemblers	1,820	245	1,575
Laborers and Freight, Stock, and Material Movers, Hand	1,620	65	1,555
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1,315	25	1,290
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1,065	45	1,020
Heavy and Tractor-Trailer Truck Drivers	940	55	885
Stock Clerks and Order Fillers	795	35	765
Registered Nurses	720	120	600
Personal Care Aides	715	75	640
General and Operations Managers	690	70	620
First-Line Supervisors of Food Preparation and Serving Workers	680	25	650
Helpers--Production Workers	635	65	570
Nursing Assistants	595	25	570
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	575	40	535
Cooks, Restaurant	570	55	515
Landscaping and Groundskeeping Workers	505	25	475
First-Line Supervisors of Production and Operating Workers	495	75	420
Welders, Cutters, Solderers, and Brazers	460	65	390
Construction Laborers	430	30	400
Accountants and Auditors	430	35	395
Maintenance and Repair Workers, General	395	30	360
Software Developers, Applications*	385	105	280
Industrial Machinery Mechanics*	380	85	295
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	365	55	305
Medical Assistants	295	40	255
First-Line Supervisors of Construction Trades and Extraction Workers	295	25	275
Management Analysts	295	50	245
Software Developers, Systems Software	275	50	225
Aerospace Engineers	275	35	240
Machinists	265	30	235
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	245	25	220
Industrial Engineers*	230	65	165
Home Health Aides	210	30	180
Electrical Engineers	185	30	155
Computer Systems Analysts	160	20	135
Computer User Support Specialists	150	25	130
Mechanical Engineers	145	25	120
Computer and Information Systems Managers	120	20	95
Information Security Analysts*	70	20	50

Note: Occupations are growth- and wages weighted and data are rounded to the nearest 5. Occupations in bold are also high-earning.

* Qualify as both high-demand and fast-growing occupations.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

Table 1.10 Selected Fast-Growing Occupations (Base Year 2018 and Projected Year 2028)

Occupation	Employment		Percent Change	Annual Growth (Percent)
	2018	2028		
Occupational Therapy Assistants	NA	NA	52	4.26
Painters, Transportation Equipment	330	450	38	3.30
Information Security Analysts*	600	820	37	3.21
Statisticians	20	30	36	3.15
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	270	360	36	3.09
Speech-Language Pathologists	340	460	33	2.88
Industrial Engineers*	2,070	2,730	32	2.80
Orthotists and Prosthetists	30	40	31	2.74
Physical Therapist Assistants	400	520	31	2.74
Software Developers, Applications*	3,460	4,520	31	2.72
Physical Therapist Aides	380	490	30	2.68
Athletic Trainers	100	120	29	2.62
Industrial Machinery Mechanics*	2,830	3,660	29	2.60
Operations Research Analysts	490	640	29	2.60
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	440	570	29	2.59
Physician Assistants	100	130	28	2.53
Taxi Drivers and Chauffeurs	760	960	27	2.38
Transportation Inspectors	NA	NA	26	2.37
Computer and Information Research Scientists	660	830	26	2.36
Anthropologists and Archeologists	20	20	25	2.26

Note: Employment data are rounded to the nearest 10 and job openings are rounded to the nearest 5. Occupations in bold are also high-earning.

* Qualify as both high-demand and fast-growing occupations. NA - Not available due to disclosure limitations.

Source: Alabama Department of Labor and Center for Business and Economic Research, The University of Alabama.

Table 1.11 Selected High-Earning Occupations (Base Year 2018 and Projected Year 2028)

Occupation	Employment		Annual Growth (Percent)	Average Annual Job Openings	Mean Annual Salary (\$)
	2018	2028			
Anesthesiologists	NA	NA	0.14	0	275,716
Physicians and Surgeons, All Other	1,110	1,160	0.51	40	255,841
Surgeons	100	100	-0.30	5	245,151
Psychiatrists	20	20	0.45	0	202,041
Family and General Practitioners	170	180	0.41	5	201,498
Chief Executives	580	570	-0.28	40	185,040
Pediatricians, General	NA	NA	-0.18	0	180,740
Computer and Information Research Scientists	660	830	2.36	75	160,076
Dentists, General	310	320	0.32	10	155,004
Nurse Anesthetists	310	360	1.58	20	153,412
Architectural and Engineering Managers	960	1,040	0.85	80	152,686
Physicists	100	110	0.67	10	146,799
Computer and Information Systems Managers*	1,140	1,350	1.70	120	144,296
Podiatrists	20	20	1.12	0	142,440
Marketing Managers	240	270	1.23	25	138,215
Managers, All Other	2,430	2,570	0.57	205	130,435
General and Operations Managers*	6,830	7,510	0.95	690	128,577

Table 1.11 Selected High-Earning Occupations (Base Year 2018 and Projected Year 2028) continued

Optometrists	120	140	1.22	5	126,768
Pharmacists	1,030	1,010	-0.14	45	125,413
Financial Managers	980	1,170	1.72	100	123,744
Engineers, All Other	3,540	3,680	0.40	265	123,360
Aerospace Engineers*	3,580	3,920	0.89	275	120,411
Electronics Engineers, Except Computer	1,210	1,280	0.60	90	119,178
Natural Sciences Managers	40	40	0.48	5	119,157
Industrial Production Managers	1,020	1,230	1.91	105	118,551
Computer Network Architects	310	350	1.34	25	117,194
Sales Managers	620	680	0.92	65	117,062
Purchasing Managers	420	460	0.94	40	116,671
Lawyers	1,290	1,370	0.59	70	115,923
Computer Hardware Engineers	970	1,030	0.65	80	114,110
Training and Development Managers	NA	NA	0.50	5	112,993
Software Developers, Applications*	3,460	4,520	2.72	385	112,234
Software Developers, Systems Software*	2,930	3,450	1.64	275	112,234
Engineering Teachers, Postsecondary	110	110	0.55	10	111,527
Human Resources Managers	330	370	1.14	35	111,217
Radiation Therapists	NA	NA	0.70	10	110,859
Chemical Engineers	220	260	1.68	20	109,301
Electrical Engineers*	2,190	2,510	1.36	185	108,530
Economics Teachers, Postsecondary	30	30	0.39	0	106,437
Administrative Services Managers	170	190	1.21	15	105,913
Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	310	340	0.93	25	105,276
Physician Assistants	100	130	2.53	10	104,968
Civil Engineers	1,130	1,210	0.70	100	104,567
Management Analysts*	2,390	2,880	1.86	295	103,883
Mechanical Engineers*	1,620	1,880	1.50	145	101,754
Business Operations Specialists, All Other	3,240	3,370	0.40	330	101,470
Materials Engineers	470	510	0.87	35	100,799
Veterinarians	230	280	1.67	15	100,391
Nurse Practitioners	880	1,090	2.17	75	100,134
Operations Research Analysts	490	640	2.60	50	98,098

Note: Employment and salaries data are rounded to the nearest 10; job openings to the nearest 5. The salary data provided are based on the May 2019 release of the Occupational Employment Statistics (OES) combined employment and wage file. Estimates for specific occupations may include imputed data.

* Qualify as both high-earning and high-demand occupations. Occupations in bold are also fast-growing. NA – Not available.

Source: Center for Business and Economic Research, The University of Alabama and Alabama Department of Labor.

Table 1.12 Selected Sharp-Declining Occupations (Base Year 2018 and Projected Year 2028)

Occupation	Employment		Net Change	Percent Change
	2018	2028		
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	11,440	10,570	-870	-8
Cashiers	14,580	14,230	-350	-2
Office Clerks, General	6,570	6,320	-250	-4
Inspectors, Testers, Sorters, Samplers, and Weighers	3,190	2,960	-230	-7
Tellers	2,320	2,140	-180	-8
Bookkeeping, Accounting, and Auditing Clerks	5,150	4,980	-170	-3
Cooks, Fast Food	1,140	990	-150	-13
Postal Service Mail Carriers	1,330	1,180	-150	-11
Executive Secretaries and Executive Administrative Assistants	790	660	-130	-17
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	590	500	-90	-16
Legal Secretaries	540	450	-90	-17
Telemarketers	270	210	-60	-23
Data Entry Keyers	280	220	-60	-20
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	430	370	-60	-14
Switchboard Operators, Including Answering Service	180	130	-50	-25
Pressers, Textile, Garment, and Related Materials	300	250	-50	-15
Forging Machine Setters, Operators, and Tenders, Metal and Plastic	410	370	-40	-11
Computer Operators	140	110	-30	-22
Reporters and Correspondents	110	80	-30	-24
Respiratory Therapy Technicians	30	10	-20	-58

Skills and Skills Gap Analyses

In order to perform well in the workplace, jobholders must have the relevant skills. Table 1.13 shows skill types and definitions as provided by O*NET Online, which offers skill sets for all occupations ranked by the degree of importance. High-earning occupations typically require skills that are obtained in the pursuit of the relevant higher education. Lower earning occupations require more basic skill sets. Some occupations have no minimum skill set requirements (e.g. dishwashers and maids).

Table 1.14 shows the percentage of selected occupations in the region that list a particular skill as primary. We define primary skills as the 10 most important skills in the required skill set for an occupation. It is important to note that a particular skill may be more important and more extensively used in one occupation than another. Table 1.14 does not address such cross-occupational skill importance comparisons. In general, basic skills are most frequently listed as primary, which means that they are important for practically all jobs.

High-earning occupations require more active learning, active listening, critical thinking, learning strategies, math, reading comprehension, speaking, science, writing, complex problem solving, management of personnel resources, management of financial and personnel resources, negotiation, judgment and decision making, and operations analysis skills than both high-demand and fast-growing jobs. These are skills that require postsecondary education and long training periods. However, high-earning jobs require less technical skills and social skills in general. High-demand occupations require more resource management skills than fast-growing occupations.

Table 1.15 shows skill gap indexes for all the 35 skills shown in Table 1.14 based on 2018 to 2028 occupation projections. By definition, skills gap indexes range from 0 to 100 and are standardized measures of the difference between current supply and projected demand. The index does not provide any information about current or base year skill supply. It focuses on the projection period and

Table 1.13 Skill Types and Definitions**Basic Skills: Developed capacities that facilitate learning or the more rapid acquisition of knowledge.**

Active Learning – Understanding the implications of new information for both current and future problem-solving and decision-making.

Active Listening – Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Critical Thinking – Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.

Learning Strategies – Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.

Mathematics – Using mathematics to solve problems.

Monitoring – Monitoring / Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

Reading Comprehension – Understanding written sentences and paragraphs in work-related documents.

Science – Using scientific rules and methods to solve problems.

Speaking – Talking to others to convey information effectively.

Writing – Communicating effectively in writing as appropriate for the needs of the audience.

Complex Problem Solving Skills: Developed capacities used to solve novel, ill-defined problems in complex, real-world settings.

Complex Problem Solving – Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

Resource Management Skills: Developed capacities used to allocate resources efficiently.

Management of Financial Resources – Determining how money will be spent to get the work done and accounting for these expenditures.

Management of Material Resources – Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.

Management of Personnel Resources – Motivating, developing, and directing people as they work, identifying the best people for the job.

Time Management – Managing one's own time and the time of others.

Social Skills: Developed capacities used to work with people to achieve goals.

Coordination – Adjusting actions in relation to others' actions.

Instructing – Teaching others how to do something.

Negotiation – Bringing others together and trying to reconcile differences.

Persuasion – Persuading others to change their minds or behavior.

Service Orientation – Actively looking for ways to help people.

Social Perceptiveness – Being aware of others' reactions and understanding why they react as they do.

Systems Skills: Developed capacities used to understand, monitor, and improve socio-technical systems.

Judgment and Decision Making – Considering the relative costs and benefits of potential actions to choose the most appropriate one.

Systems Analysis – Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

Systems Evaluation – Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.

Technical Skills: Developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems.

Equipment Maintenance – Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Equipment Selection – Determining the kind of tools and equipment needed to do a job.

Installation – Installing equipment, machines, wiring, or programs to meet specifications.

Operation and Control – Controlling operations of equipment or systems.

Operation Monitoring – Watching gauges, dials, or other indicators to make sure a machine is working properly.

Operations Analysis – Analyzing needs and product requirements to create a design.

Programming – Writing computer programs for various purposes.

Quality Control Analysis – Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Repairing – Repairing machines or systems using the needed tools.

Technology Design – Generating or adapting equipment and technology to serve user needs.

Troubleshooting – Determining causes of operating errors and deciding what to do about it.

Source: O*NET Online (<http://online.onetcenter.org/skills/>).

Table 1.14 Percentage of Selected Occupations for Which Skill Is Primary

	Selected High-Demand Occupations	Selected Fast-Growing Occupations	Selected High-Earning Occupations
Basic Skills			
Active Learning	28	55	58
Active Listening	73	80	86
Critical Thinking	70	80	86
Learning Strategies	0	5	8
Mathematics	13	20	22
Monitoring	58	60	46
Reading Comprehension	53	65	86
Science	5	5	32
Speaking	68	70	84
Writing	28	45	50
Complex Problem Solving Skills			
Complex Problem Solving	40	60	72
Resource Management Skills			
Management of Financial Resources	0	0	2
Management of Material Resources	0	0	0
Management of Personnel Resources	10	0	12
Time Management	18	10	14
Social Skills			
Coordination	38	25	22
Instructing	10	10	8
Negotiation	8	0	12
Persuasion	8	5	8
Service Orientation	20	35	14
Social Perceptiveness	33	40	38
Systems Skills			
Judgment and Decision Making	33	50	74
Systems Analysis	13	25	12
Systems Evaluation	8	15	14
Technical Skills			
Equipment Maintenance	5	10	0
Equipment Selection	5	5	0
Installation	0	0	0
Operation and Control	18	20	0
Operation Monitoring	15	25	2
Operations Analysis	10	5	14
Programming	3	15	4
Quality Control Analysis	8	15	0
Repairing	5	5	0
Technology Design	0	0	0
Troubleshooting	13	10	0

Note: Rounding errors may be present.

Source: O*NET Online and Center for Business and Economic Research, The University of Alabama

Table 1.15 Skills Gap Indexes (Base Year 2018 and Projected Year 2028)

Skill	Skill Type	Total Openings (Projected Demand)	Skills Gap Index	Replacement Index
Active Listening	Basic	47,315	73	95
Speaking	Basic	46,990	72	94
Monitoring	Basic	41,560	64	94
Critical Thinking	Basic	37,930	58	94
Coordination	Social	36,500	56	93
Social Perceptiveness	Social	35,400	54	95
Service Orientation	Social	33,985	52	96
Reading Comprehension	Basic	33,000	51	94
Time Management	Resource	32,940	51	94
Judgment and Decision Making	Systems	25,575	39	92
Writing	Basic	24,140	37	94
Active Learning	Basic	23,525	36	92
Complex Problem Solving	Complex	21,410	33	91
Persuasion	Social	16,420	26	93
Instructing	Social	14,900	23	91
Negotiation	Social	13,620	21	94
Learning Strategies	Basic	13,175	21	90
Mathematics	Basic	11,190	18	89
Operation Monitoring	Technical	10,945	17	92
Management of Personnel Resources	Resource	10,540	17	89
Systems Analysis	Systems	10,100	16	93
Operation and Control	Technical	9,340	15	93
Quality Control Analysis	Technical	8,905	14	92
Systems Evaluation	Systems	8,350	13	92
Troubleshooting	Technical	6,025	10	92
Equipment Maintenance	Technical	3,665	6	86
Repairing	Technical	3,660	6	92
Operations Analysis	Technical	2,890	5	91
Management of Financial Resources	Resource	2,445	4	91
Equipment Selection	Technical	1,915	3	89
Management of Material Resources	Resource	1,795	3	90
Science	Basic	1,660	3	82
Installation	Technical	1,075	2	83
Programming	Technical	995	2	93
Technology Design	Technical	970	2	79

Note: These are annualized skills indexes based on 2018 to 2028 occupation projections.

Source: Center for Business and Economic Research, The University of Alabama, Alabama Department of Labor, and O*Net Online

identifies critical skill needs. The index essentially ranks expected training needs. The higher the index the more critical the skill over the specified projection period and a higher skill gap index indicates a need to increase the scale of training.

For policy and planning purposes, skill gap indexes have to be considered together with replacement indexes, which illustrate the expected share of job openings due to replacement. Replacement is necessary because of turnover and people leaving the labor force. The smaller the replacement index, the larger the share of job openings due to growth, which in turn implies a need to increase the pace

of skill training. Skill gap indexes demonstrate the need to ramp up the scale of skill training while replacement indexes address the pace of training.

By skill type, the region's skill gap indexes show that basic skills are most critical followed by social skills. The importance of basic skills generally and for high-demand, high-growth, and high-earning jobs particularly indicates a strong need for training in these skills. The pace of training needs to increase for technical, systems, and a few resource management skills, while the scale of training must increase for basic and social skills.

Education and Training Issues

Educational attainment in North AlabamaWorks is lower for high school graduates than the state but higher for bachelor's degree. During the period 2015 to 2019, 85.3 percent of residents age 25 and over had graduated from high school, compared to 86.2 percent for Alabama, whereas 26.1 percent had a bachelor's or higher degree versus 25.5 percent for the state. Skill and education requirements for jobs keep rising. This highlights a strong need to raise educational attainment in the region.

Table 1.16 shows the number of selected occupations in the region for which a particular education/training category is most common. In general, high-earning occupations require high educational attainment; 49 (98 percent) of the top 50 high-earning occupations require a bachelor's

or higher degree. Thirteen (32.5 percent) of the top 40 high-demand occupations require an associate degree at the minimum. Thirteen (65.0 percent) of the top 20 fast-growing occupations require an associate's degree at the minimum, and 11 (55.0 percent) requiring a bachelor's or higher degree.

The 2018 to 2028 occupational projections indicate that in the future more jobs will require postsecondary education and training at a minimum. Currently job ads are requiring at least more than a high school diploma or GED. Of the region's 734 occupations, 124 are expected to decline over the period and education and training for these should slow accordingly.

Table 1.16 Number of Selected Occupations by Education/Training Requirement

Most Common Education/Training Requirements Categories	Selected High-Demand Occupations	Selected Fast-Growing Occupations	Selected High-Earning Occupations
Doctoral Degree or First Professional Degree	0	0	15
Master's Degree	0	6	4
Bachelor's Degree	13	5	30
Associate Degree	0	2	1
Postsecondary Non-Degree	3	1	0
Some College, no Degree	1	0	0
High School Diploma or Equivalent	15	5	0
No Formal Educational Credential	8	1	0

Source: O*NET Online; Center for Business and Economic Research, The University of Alabama; and Alabama Department of Labor.

IMPLICATIONS AND RECOMMENDATIONS

From a 2018 base, worker shortfalls in North AlabamaWorks of about 48,900 and 61,300 are estimated by 2028 and 2030, respectively (Table 1.17). The worker shortfall is projected to reach about 75,400 in 2035 and 88,200 in 2040. A focus on developing worker skills and addressing the expected shortfall must be a priority through 2040.

Employment is critical to economic development, so strategies to address any potential shortfalls must be adopted and implemented. Such strategies should aim at increasing labor force participation, encouraging immigration, and raising worker productivity. Efforts to address the need for higher labor force participation, higher productivity, and faster labor force growth to meet workforce demand must include: (1) improvements in education and its funding; (2) continuation and enhancement of programs to assess, retrain, and place dislocated workers; (3) focus on hard-to-serve populations (e.g. out-of-school youth); (4) lowering of the high school dropout rate; (5) use of economic opportunities to attract new and younger residents; (6) encouragement of older worker participation in the labor force; and (7) facilitation of in-commuting.

Improving education is vital because a highly educated and productive workforce is critical to economic development. The educational and training requirements of high-demand, fast-growing, and high-earning occupations show the significance of education in developing the workforce of the future. The importance of basic skills in general and for high-demand, high-growth, and high-earning jobs in particular demonstrates a strong need for training in these skills. The pace of training needs to increase for technical, systems, and a few resource management skills, while the scale of training for social and basic skills need to be ramped up. Ideally, all high school

graduates should possess basic skills so that postsecondary and higher education can focus on other and more complex skills while enhancing these basic skills. Employers should be an integral part of planning for training as they can help identify future skill needs and any existing gaps. Education and training for the 20 sharp-declining occupations in Table 1.12 should slow accordingly.

Another very important reason to improve education is that people with more education are more likely to be employed; data on worker participation and educational attainment show that labor force participation increases with worker education. Productivity also rises with education, which yields high private and social returns. Workforce development must view all education and other programs (e.g. adult education, career technical training, worker retraining, career readiness, etc.) as one system. Funding to support workforce development may require tax reform at state and local levels and must provide for flexibility as workforce needs change over time and demand different priorities.

Programs to assess, retrain, and place dislocated workers—especially those affected by outsourcing and structural changes in the economy—should continue and be enhanced because they can improve the labor force participation rate. Hard-to-serve populations include persons in poverty, those receiving welfare, residents of sparsely populated areas, and those on active parole. These populations are often outside of the mainstream economy and are in poverty. They usually have difficulty finding work because they have low levels of educational attainment, lack occupational skills, or face geographic or other barriers. They are a potential human resource, but investment in training, transportation, child care, infrastructure, etc. may be needed to tap this resource.

Table 1.17 Expected Worker Shortfall

	2018-2028	2018-2030	2018-2035	2018-2040
Total population growth (percent)	8.7	10.5	15.5	21.0
Age 20-64 growth (percent)	3.3	4.0	8.0	13.1
Job growth (percent)	13.1	16.4	23.2	30.9
Worker shortfall (percent)	9.8	12.4	15.2	17.8
Worker shortfall (number)	48,853	61,324	75,385	88,192

Source: Center for Business and Economic Research, The University of Alabama.

In-migration and in-commuting are ways of growing the labor force. The region's population growth rate is high but in the future job growth is expected to be higher than the growth of the working age group population. This might hinder the region's ability to meet the expected job demand barring future economic slowdowns. Higher employment demand could be partially served by in-commuting. However, new residents can be attracted using high-paying job opportunities from the region's economic development successes. Investment in amenities and infrastructure may be needed to support such growth. In-migration is generally more beneficial to a region than in-commuting since it grows the economy faster and adds to the tax base.

Policies that facilitate and encourage older worker participation are needed as older workers can help meet the region's workforce challenges. Such policies could be related to income taxation, job flexibility, and retirement programs. As the share of older people in the population is projected to increase (see Table 1.5), it becomes even more important that they be active in the workforce. Older worker participation has been rising nationally since the early 1990s. This has been attributed to reasons including:

- Older workers can work longer because they are healthier.
- The number of physically demanding jobs is falling.
- Defined contribution plans are replacing pensions.
- There are fewer employer-paid retiree health insurance programs.
- Social security reforms affecting those born after 1938 which (i) gradually raised the normal retirement age from 65 to 67, (ii) increased the rate at which monthly payments rise with delayed benefits, and (iii) eliminated the reduction in benefits for those working beyond the full retirement age.

Diversifying the region's economy will strengthen it. This demands that economic development also focus on retaining, expanding, and attracting businesses that provide more high-earning jobs. Current workers—including the underemployed—would welcome higher-earning opportunities. An economic development focus on diversification would require that workforce development efforts pay attention to postsecondary and higher educational systems to ensure a ready and available workforce for new and expanding businesses. The higher incomes earned by graduates of these institutions would help raise personal income for the region and provide additional local (county and city) tax revenue. Raising personal income by improving educational attainment and technological skills for a region that has low population and labor force growth rates is an effective economic development strategy. Together, workforce development and economic development can build a strong, well-diversified economy. Indeed, one cannot achieve success without the other.



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